

Review of: "On Bell Experiments and Quantum Entanglement"

Justo Lambare¹

¹ Universidad Nacional de Asunción

Potential competing interests: No potential competing interests to declare.

The author says:

"However, the implications of Bell experiments are questionable. For the following two reasons, Bell experiments and the EPR experiment are essentially different.

1. In Bell experiments, the validity of the quantum-mechanical description of the physical world and the legitimacy of the standard interpretation of quantum randomness are taken for granted, which is a fatal logical flaw.
2. In Bell inequalities, a physical constraint imposed on measuring individual quantum objects, i.e., *the same single quantum object can at most be measured only once*, is violated."

Both points are incorrect. In one, it is incorrect that, in Bell experiments, anything is taken for granted. On the contrary the experiment is supposed to reveal whether hidden variables theories of the kind proposed by Bell, are or are not possible. So, it does not take for granted either quantum mechanics or hidden variables.

Point two is a recurrent mistake that was already pointed out to Bell in 1972 in a paper by L. DE LA PEÑA, A.. A. M. CETTO and T. A. BRODY: "On Hidden-Variable Theories and Bell's Inequality".

If the Bell inequality depended on measuring a single photon more than once, then the inequality would be indeed meaningless and any experiment would be a useless lost of time. By the way, another common but similar mistake that would make the inequalities meaningless is a presumed dependence on Counterfactual Definitess.

In our opinion, the two points above invalidate any analysis contained in the article.